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(54) **Carbonylation of olefins.**

(57) The invention relates to a process for the mon-ocarbonylation of optionally substituted olefinically unsaturated compounds by reaction with carbon monoxide and a coreactant in the presence of a catalyst system comprising:

- a) a source of palladium cations,
  - b) a source of bidentate diphosphine, and
  - c) a source of anions,
- characterized in that the diphosphine is selected from the group of diphosphines of formula I,



wherein R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> independently represent an optionally substituted aliphatic group, or R<sup>1</sup> and R<sup>2</sup> together and/or R<sup>3</sup> and R<sup>4</sup> together represent an optionally substituted bivalent aliphatic group, and X represents a bivalent bridging group containing from 1 to 10 atoms in the bridge, to produce various carbonyl compounds including aldehydes, ketones, esters, and amides. The invention also relates to certain catalyst systems useful in this reaction.

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## EUROPEAN SEARCH REPORT

Application Number

EP 92 20 0058

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	EP-A-0 227 160 (SHELL) * Column 3, lines 31-34; claims 1-7,10-15 * ---	1-7,15-18,25,26,30	C 07 C 51/14 C 07 C 67/38 C 07 C 45/50
A	EP-A-0 406 848 (YEDA RESEARCH) * Claims 1-4 * ---	1-5	
A	US-A-3 168 553 (SLAUGH) * Column 2, lines 26-44; column 3, lines 34-42; column 4, lines 38-74; claim 1 * -----	1-5	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			C 07 C 51/00 C 07 C 67/00 C 07 C 45/00
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 13-11-1992	Examiner KLAG M.J.
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ..... & : member of the same patent family, corresponding document	